

true solar noon on April 28 occurs at 12:16 p. m., one-hundred and fifth meridian standard time, at which moment the altitude of the sun read  $55.5^\circ$  and the azimuth  $180^\circ$ .

*Severe drought at Washington, D. C., April-May, 1930.*—During the period April 18–May 14, 1930, no measurable rain fell at Washington, D. C. The longest drought hitherto experienced was that of September 30–October 26, 1924, or a single day longer than the first-mentioned. October, 1924, was exceptionally dry in the eastern half of the country; in some sections it was the driest month of that name for 100 years, the single exception being Florida where abundant rains fell.

The drought under discussion was one of the most severe spring droughts ever experienced. As shown by the Weekly Weather and Crop Bulletin of May 6, 1930, the month of April as a whole was exceptionally dry in the Gulf States, the Ohio Valley and Tennessee, and in the Atlantic States north of Georgia.

The visible cause both of the 1924 fall drought and the 1930 spring drought was the same in the larger features, viz, the predominance of anticyclones that descended from higher latitude and the consequent blocking of the eastward movement of cyclonic storms having their origin westward over the Plateau and Rocky Mountain regions. This effect was augmented by the anticyclonic conditions over the western Atlantic which spread to the westward over the southeastern States. In the 1924 drought not a single cyclonic storm crossed the Lake region and passed down the St. Lawrence Valley, but in the 1930 drought several cyclonic storms passed to the eastward over the St. Lawrence Valley; the rainfall from them was, however, light and spotted in distribution. Thus Baltimore, Md., only 40 miles east-northeast of Washington, received

showers on April 21, 1929, and May 3, aggregating 0.16 inches, and Richmond, Va., about 110 miles south, received two showers totaling but 0.10 inch. The drought was broken on May 14 by general rains over the whole of the droughty region. Curiously enough, the direct cause of the breaking of the drought was an active anticyclone whose front had reached Manitoba, just north of Lake Winnipeg, on May 12. This anticyclone caused a rather vigorous cyclone, centered on the morning of the 12th over the valley of the Red River of the North, to change its course to the eastward and eventually to move across Lake Michigan, giving off a secondary over the upper Ohio Valley that produced general rains in the droughty regions.

Study of this and previous droughts leads to the conclusion that there is a definite rain shadow east of the Appalachians when rain-producing storms come from the west and pass down the St. Lawrence Valley—A. J. H.

*Meteorological summary for Chile, March, 1930 (by J. Bustos Navarrete, Observatorio del Salto, Santiago, Chile).*—With March there came increased activity in the atmospheric circulation over the Pacific Ocean; this was accompanied by a marked increase in rainfall in the south. Mean temperatures were rather high in the central zone of Chile.

The most important anticyclones were charted during the following periods: 3d–4th, 11th–13th, and 17th–20th. All of these highs moved from southern Chile toward Argentina.

The depressions causing unsettled weather and rains in the southern area were mapped during the following periods: 6th–7th, 9th–12th, 13th–14th, and 26th–28th. In all periods the path was across the extreme southern region.—Translated by W. W. R.

## BIBLIOGRAPHY

C. FITZHUGH TALMAN, in Charge of Library

### RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

Ångström, Anders.

Measurement and registration of the outgoing effective temperature radiation. Stockholm. 1929. 6 p. 22 cm. (Arkiv. för mat., astron. och fysik. Bd. 22 B. N:o 1.)

Statistics and meteorology. p. 228–234. 24½ cm.

Baur, Franz.

Das Klima der bisher erforschten Teile der Arktis. p. 77–89: 110–120. figs. plates (fold.) 28 cm. (Sonderab.: Arktis. Jahrg. 1929. H. 3–4.)

Bennett, A. B., jr.

Forecasting the weather. [Washington, D. C.] [1918.] 16 p. figs. 23 cm.

Bignell, L. G. E.

Does rainfall increase in oil fields? v. p. illus. 34½ cm. (Extr.: Oil & gas journ. Oct. 31, 1929.)

Conference of empire meteorologists. Agric. sec.

British agricultural meteorological scheme. Observers' handbook. London. 1929. 34 p. figs. plates (part fold.) 25 cm.

Report. 1. 1929. London. 1929. 16 p. 25 cm.

Eriksson, J. V.

Den kemiska denudationen i Sverige. La dénudation chimique en Suède. Stockholm. 1929. 96 p. figs. 31½ cm. (Med. Stat. met.-hydrog. anstalt. Bd. 5. N:o 3.)

Fujiwhara, S.

On the behavior of lines of discontinuity, cyclones and typhoons in the vicinity of Japan. p. 120–131. figs. 26 cm. Repr.: Geophys. mag., v. 2, no. 2, 1929.)

Galtsoff, Paul S.

Destruction of oyster bottoms in Mobile Bay by the flood of 1929. Washington. 1930. p. 741–758. fig. plates (fold.) 23½ cm. (Appen. 11 to report U. S. comm. fish. 1929.)

Glasspoole, John.

Extremes of rainfall over the British Isles. 9 p. diagr. 24½ cm. (Official circular Brit. waterworks assoc. No. 81, 1929.)

Jaumotte, J.

Sur le mouvement des masses d'air dans l'atmosphère. Bruxelles. 1930. p. 1018–1055. figs. 25½ cm. (Acad. roy. Belg. Extr.: bull. cl. sci. Séance du 7 déc. 1929. 5e sér. T. 15.)

Kopp, W.

Wetterkarte für den meteorologischen Unterricht. Berlin. n. d. 26 p. illus. 30 cm.

McEachron, K. B.

Thyrite, a new material for lightning arresters. 5 p. 61½ cm. (Paper read before A. I. E. E. mid-winter convention, New York City, Jan. 27–31, 1930.)

Meinardus, Wilhelm.

Die räumliche und zeitliche Verteilung der Beleuchtung in den Polargebieten. 6 p. plates (part fold.) 27½ cm. (Sonderab.: Geogr. Anzeiger. Jahrg. 1930. H. 1.)

Mercanton, P. L.

La température du sol à Lausanne (Champ-de-l'Air) à un mètre de profondeur, de 1898 à 1918. Lausanne. 1929. P. 33–37. fig. 24½ cm. (Bull. de la soc. vaud. des sci. nat. v. 57 no. 223. 1929.)

National research council. Div. geol. & geogr.

Report of the committee on submarine configuration and oceanic circulation. April 27, 1929. (Appendix E of annual report of division.) 2, 50 p. 28 cm.

Schmidt, Wilhelm.

Meteorologische Feldversuche über Frostabwehrmittel. Wien. 1929. 43 p. figs. 30½ cm. (Anhang zu den Jahrb. der Zentralanst. für Met. und Geod. Jahrg. 1927. Pub. Nr. 135.)

Theaman, John R.

Book of excessive rainfall records. Indianapolis. 1929. unpag. 21 cm.